1   **PROVIDING CUSTOMER DATA TO AN**
2   **AUTOMATIC CALL DISTRIBUTION SYSTEM AGENT**

3   <u>BACKGROUND AND SUMMARY</u>

4   The present invention relates to providing customer data in

5   an automatic call distribution (ACD) system.

6   ACD systems are typically used to distribute telephone calls

7   among a group of agents of an organization. ACD systems may be

8   used to distribute calls under any of a number of different

9   formats. In a first instance, the term "call" may be used to

10   refer to a request for communication received from (or placed

11   through) a public switched telephone network (PSTN). A call may

12   also be a voice path based upon packet data transferred through a

13   computer network such as the Internet using web telephony.

14   Alternatively, a call may be any communication such as an e-mail,

15   a facsimile, video, web-site inquiry received through the

16   Internet, etc. Thus, ACD systems are transaction processing

17   systems which typically handle one or more of a wide variety of

18   these "call" types.

19   An organization often disseminates a single telephone

20   number, URL or e-mail address to customers and to the public in

21   general as a means of contacting the organization. As calls are

22   directed to the organization from the PSTN or the Internet, the

23   ACD system directs the calls to the organization's agents based

24   upon some algorithm. For example, where all agents are

25   considered equal, the ACD may distribute a call based on which

1 agent has been idle the longest time. Of course, there are many

2 other possible ways to select an agent, or a subgroup of agents

3 from whom an available one will be selected.

4 The ACD system can be provided with any number of routing

5 mechanisms for establishing call paths between callers and

6 agents. In some systems, a first path may be established through

7 a circuit switched voice port, such as for calls from the PSTN.

8 An alternative path may be a data link (such as over a Local Area

9 Network (LAN)) such as for an e-mail received through a computer

10 network such as the Internet. A data link also can be used to

11 provide customer data to the agent. For example, such customer

12 data can include contact information relating to the particular

13 contact, such as a customer identifier provided by the customer

14 in response to automatic inquiries. As another example, such

15 data also can include previously stored information available

16 from a database of the organization.

17 Control of the switching and communications with a database

18 and with an external network such as a PSTN may, for example, be

19 accomplished generally as described in U.S. Pat. Nos. 5,268,903

20 and 5,140,611, both to Jones et al. which are hereby incorporated

21 by reference. Routing of calls to agents may, for example, be

22 accomplished generally as described in U.S. Pat. No. 5,335,269 to

23 Steinlicht, U.S. Pat. No. 5,365,581 to Baker et al., and U.S.

24 Pat. No. 5,400,327 to Dezonno, which are hereby incorporated by

25 reference.

1   In existing systems, providing an agent with customer data,

2   such as mentioned above, can require specialized application

3   programs for agent computer terminals. In some instances, it can

4   require disclosure of proprietary information to interface an ACD

5   with network computers. In some cases, it can limit an

6   organization to types of data and to a format built into

7   purchased ACD systems.

8   In one embodiment of the present invention, use is made of

9   browser application programs which now are readily available

10   independent of an ACD system, and which are already commonly

11   installed on many personal computers. Desired customer data and

12   its format can be tailored to the organization's needs, and can

13   be packaged as a web page. The ACD can provide a universal

14   resource locator (URL) to a browser of the agent, which accesses

15   the URL address at a server. The web page corresponding with the

16   URL is provided by the server to the browser. The data can be

17   displayed to the agent, regardless of the type of customer

18   contact with the organization's ACD system.

19   The features of the present invention which are believed to

20   be novel are set forth below with particularity in the appended

21   claims. The invention, together with further advantages thereof,

22   may be understood by reference to the following description in

23   conjunction with the accompanying figures, which illustrate some

24   embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

2   Figure **1** is a functional block diagram illustrating an

3   embodiment of the invention.

4   Figure **2** is a flow chart illustrating the an embodiment of

5   the invention.

6   **DETAILED DESCRIPTION**

7   Figure **1** is a functional block diagram illustrating an

8   embodiment of the invention. The contact between an external

9   unit **11** and an organization's ACD **12** can be in any one or any

10   combination of ways, such as through a public switched telephone

11   network (PSTN), an internet network, a local area network, or

12   other voice and/or data network. This contact can, for example,

13   be a traditional inbound telephone call. Some other examples of

14   types of contacts include web callbacks, e-mail contacts, and web

15   chat contacts.

16   Upon receiving a contact from an external unit **11**, the ACD

17   **12** will process the contact by routing it to an agent. The agent

18   can be one of a plurality of agents at a plurality of agent

19   stations. Communication between ACD **12** and an agent can be any

20   suitable communication link including, for example, a data link

21   and/or a circuit switched telephone connection. It could be

22   through a private network and/or a public network (particularly

23   for a remote agent). It could include hardwire and/or wireless

24   communications.

1   In the embodiment of Figure 1, the agent station comprises

2   an agent personal computer 13 with a browser application program.

3   A browser is software which translates the digital bits in a

4   computer location to a medium which can be displayed meaningfully

5   to the user such as written text. A web browser is an interface

6   which allows display at a personal computer monitor of data

7   located in a computer network. Web browsers are readily

8   available and are commonly installed in personal computers today.

9   In the embodiment of Figure 1, the browser in the agent's

10   personal computer 13 can access a server 14. Server 14 has

11   access to one or more databases 15. In one configuration, the

12   server 14 can be publicly accessible such as through the Internet

13   and it also can, for example, be part of an intranet, or private

14   computer network which uses Internet software and standards. It

15   is common today for an organization to set up an intranet, in

16   which access to at least certain data is limited to the

17   organization or to parts of the organization.

18   The objective of providing data, relating to a particular

19   contact, to the agent handling the contact can be accomplished

20   using any over-the-counter browser on the agent's personal

21   computer 13 without the need for specialized software. Figure 2

22   is a flow chart illustrating an example of how this can be

23   accomplished, regardless of the contact type.

24   As shown in Figure 2, ACD 12 can collect contact-derived

25   information before a contact is routed to an agent. For example,

26   in the case of a traditional telephone call, contact-derived

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1 information such as a calling party number, a called party

2 number, or an account number can be collected by the ACD **12**. For

3 purposes of discussion, calling party number is used to refer

4 generally to information about the call originator which might be

5 derived from the call being made. For example, ANI or automatic

6 number identification can provide the billing number of the

7 originating party. Caller ID can provide a telephone number and

8 name of the originating telephone subscriber in many instances.

9 This information can be collected by ACD **12** as soon as the

10 telephone call arrives.

11 A called party number can be provided by DNIS or dialed

12 number identification service. An organization can use one trunk

13 group to serve a plurality of telephone numbers. Each number can

14 be associated with a separate function, such as sales inquiries,

15 customer technical service, account maintenance, internal use,

16 and so forth. Consequently, the called party number can provide

17 information about the purpose of the telephone call.

18 An account number, a product model number (such as for

19 technical service assistance), or other information can be

20 collected from the caller, such as by a VRU or voice response

21 unit, through programmed scripts prior to the ACD **12** routing the

22 call to an agent.

23 Similar contact-derived information can be collected by the

24 ACD **12** regardless of the type of contact. For example, the

25 source name and subject line of an incoming e-mail can be

26 collected automatically by the ACD **12**. In the case of a web

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1   callback contact, the ACD could at a minimum collect the number

2   it is calling back and the name of the person for whom the agent

3   is supposed to ask when the callback is executed. A contact's

4   computer address could be collected with a web callback or with a

5   web chat contact.

6   As shown in Figure **2**, ACD **12** also can add contact processing

7   information, such as the type of contact, identification of the

8   agent to whom the contact is being routed, or identification of

9   the treatment given the contact (such as the programmed scripts

10   used) which can affect the information which should be displayed

11   to the agent.

12   Continuing with Figure **2**, ACD **12** can attach the contact-

13   derived information and/or the contact processing information

14   mentioned above to a URL, or universal resource locator, which

15   the ACD can send to the agent's personal computer **13**. A URL is a

16   string expression that at least constitutes a computer network

17   address. Conventionally, a URL begins with a protocol method

18   which a browser is to use when searching for the address. The

19   most common protocol is http (hypertext transport protocol). The

20   information which the ACD **12** can attach to the URL can be

21   information which will be at least part of the data ultimately

22   displayed to the agent. It also can be information used to

23   identify other data which will be sought and packaged for

24   display. For example, an account number collected by the ACD **12**

25   can be used to identify the account information which can then be

1   collected from a database **15** for display at the agent's personal

2   computer **13**.

3   In one embodiment, ACD **12** can send the URL to the browser on

4   the agent's personal computer **13**, without the need for any

5   software relating to the ACD **12** on the agent's personal computer.

6   In another embodiment, ACD **12** can send the URL to separate ACD

7   console software on the agent's personal computer **13**, and that

8   separate software can provide the URL to the browser.

9   An organization can develop the type of information and

10   format for information required by its agents. This can include

11   information stored in a plurality of unrelated databases **15**,

12   including private information about particular customers stored

13   in limited access locations. The format for this information,

14   and/or instructions for obtaining at least some of the

15   information, can be located on server **14**. An organization can

16   develop and set up what it desires on server **14**, independent of

17   hardware and software constituting the organization's ACD system

18   **12**.

19   As mentioned above, the browser can be an ordinary over-the-

20   counter software program, independent of the ACD system **12**.

21   Continuing with Figure **2**, the browser can operate on the URL

22   received from the ACD **12** just like the browser normally operates.

23   The computer network address included in the URL from ACD **12** can

24   be located in server **14**. One or more web pages corresponding

25   with the URL can be displayed to the agent via the browser in the

26   agent's personal computer **13**. The web page can be an HTML page.

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1   HTML, or hypertext markup language, is a software language

2   frequently used to create web pages. The web page can be a

3   static page. The web page can include links for additional

4   information. An organization can use more than one URL in

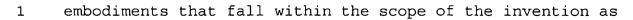5   connection with its ACD system **12**. The particular URL, and the

6   particular data in the corresponding web page, can depend on some

7   of the contact information discussed above.

8   Server **14** can include instructions or programs necessary to

9   set up the web page corresponding with the URL, to obtain the

10 content or values of specified parameters, and to interface with

11 any databases **15** to obtain required data. The URL to be sent by

12 the ACD **12** can be configurable to correspond with what has been

13 programmed in the server **14**. However, the ACD **12** need only send

14 the URL to the agent's personal computer **13**. The ACD **12** need not

15 constrain what is to be displayed to the agent, and need not be

16 integrated with any interfaces necessary to obtain the desired

17 data. The plurality of personal computers **13** of the plurality of

18 agents only need ordinary over-the-counter browsers, and do not

19 need other software application programs to interface with one or

20 more databases **15** or to control the display of data.

21   The embodiments discussed and/or shown in the figures are

22 examples. They are not exclusive ways to practice the present

23 invention, and it should be understood that there is no intent to

24 limit the invention by such disclosure. Rather, it is intended

25 to cover all modifications and alternative constructions and

1   embodiments that fall within the scope of the invention as

2   defined in the following claims: